Log Event A

Borehole # 21-08-05

Borehole Information

Farm : BX	**Tank :** BX-108	**Site Number :** 299-E33-235
N-Coord : 45,460	**W-Coord :** 53,425	**TOC Elevation :** 655.50
Water Level, ft :	**Date Drilled :** 9/30/1973	

Casing Record

Type : Steel-welded	Thickness : 0.280	ID, in. : 6
Top Depth, ft. : 0	Bottom Depth, ft. : 100	

Borehole Notes:
Borehole 21-08-05 was drilled in September 1973 to a depth of 100 ft with 6-in. casing. The casing thickness is presumed to be 0.280 in., on the basis of the published thickness for schedule-40, 6-in. steel tubing. A driller's log was not available for this borehole, so data from Chamness and Merz (1993) were used to provide borehole construction information. No information was available to indicate that the casing was perforated or grouted. The top of the casing, which is the zero reference for the SGLS, is about 0.5 ft below the ground surface.

The borehole was swabbed before logging and internal contamination was detected. The logging tool was sleeved for each log run.

Equipment Information

Logging System : 1B	**Detector Type :** HPGe	**Detector Efficiency:** 35.0 %
Calibration Date : 02/1997	**Calibration Reference :** GJO-HAN-14	**Logging Procedure :** P-GJPO-1783

Log Run Information

Log Run Number : 1	**Log Run Date :** 07/31/1997	**Logging Engineer:** Alan Pearson
Start Depth, ft.: 0.0	**Counting Time, sec.:** 100	**L/R :** L **Shield :** N
Finish Depth, ft. : 85.0	**MSA Interval, ft. :** 0.5	**Log Speed, ft/min.:** n/a

Log Run Number : 2	**Log Run Date :** 08/01/1997	**Logging Engineer:** Alan Pearson
Start Depth, ft.: 84.0	**Counting Time, sec.:** 100	**L/R :** L **Shield :** N
Finish Depth, ft. : 98.5	**MSA Interval, ft. :** 0.5	**Log Speed, ft/min.:** n/a

Borehole # 21-08-05

Log Event A

Analysis Information

Analyst : D.L. Parker

Data Processing Reference : MAC-VZCP 1.7.9 Analysis Date : 12/10/1997

Analysis Notes :

This borehole was logged by the SGLS in two log runs. The pre-survey and post-survey field verification spectra for all logging runs met the acceptance criteria established for peak shape and system efficiency. The energy calibration and peak-shape calibration from these spectra were used to establish the peak resolution and channel-to-energy parameters used in processing the spectra acquired during the logging operation. No fine gain adjustments were necessary during the log runs.

Casing correction factors for a 0.280-in.-thick steel casing were applied during analysis.

The man-made radionuclides Cs-137 and Co-60 were detected in this borehole. The Cs-137 contamination was detected almost continuously from the ground surface to 41 ft and almost continuously from 53 to 62.5 ft. Co-60 contamination was detected from 67.5 to 68 ft and continuously from 76 to 77 ft.

Shape factor analysis was performed. The shape factors provide insights into the distribution of the Cs-137 contamination and into the nature of zones of elevated total count gamma-ray activity not attributable to gamma-emitting radionuclides.

The K-40 concentration values increase from 40.5 to 41 ft and remain elevated to the bottom of the logged interval. A zone of relatively lower K-40 concentrations occurs from 65.5 to 68.5 ft.

Additional information and interpretations of log data are included in the main body of the Tank Summary Data Report for tank BX-108.

Log Plot Notes:

Separate log plots show the man-made and the naturally occurring radionuclides. The natural radionuclides can be used for lithology interpretations. The headings of the plots identify the specific gamma rays used to calculate the concentrations. Uncertainty bars on the plots show the statistical uncertainties for the measurements as 95-percent confidence intervals. Open circles on the plots give the MDL. The MDL of a radionuclide represents the lowest concentration at which positive identification of a gamma-ray peak is statistically defensible.

A combination plot includes the man-made and natural radionuclides, the total gamma derived from the spectral data, and the Tank Farms gross gamma log. The gross gamma plot displays the latest available digital data. No attempt has been made to adjust the depths of the gross gamma logs to coincide with the SGLS data.

Plots of the spectrum shape factors are included. The plots are used as an interpretive tool to help determine the radial distribution of man-made contaminants around the borehole. A plot of the selected historical gross gamma logs is also included.